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Montana Solar Community Project

Garrett Martin, Ben Brouwer, & Andrew Valainis

Overview

- What is MSCP?
  - Goals
  - Project Partners
  - Resources
- What can community-scale solar look like?
  - Shared Solar
  - Solar on Community Buildings
  - Collective Community Purchasing
    AKA "Solarize"
- What financial resources are available to communities?
- What is your vision for solar in Montana communities?

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Montana Solar Community Project

- 3 Year Project
- Provide a blueprint for how Montana communities can expand access to community-scale solar solutions
- Work directly with communities interested in developing community-scale solar projects
- 80% funded by a partnership award from DOE's SunShot Initiative
  - Collaborative national effort to drive down the cost of solar electricity to $0.06 per kWh
- Two Phases
  - Information gathering
  - Direct community assistance

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Project Partners

- Flathead Electric Co-op
- Missoula Electric Co-op
- Montana-Dakota Utilities
- Montana Electric Cooperatives' Association
- Montana Renewable Energy Association
- NorthWestern Energy

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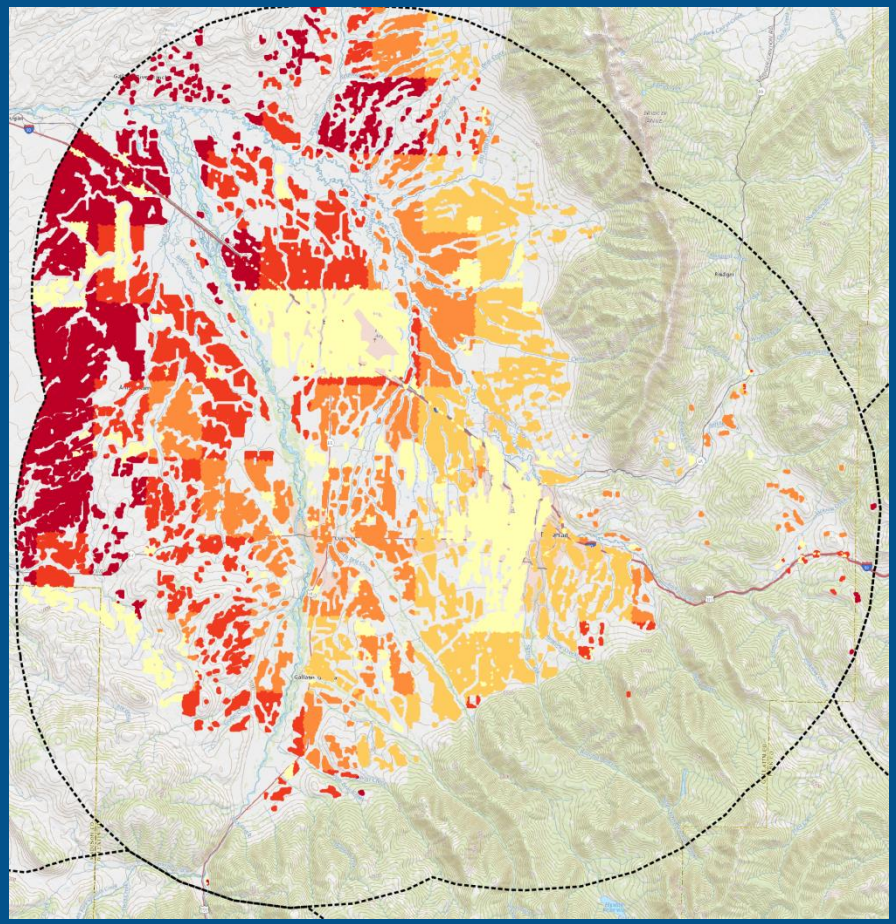
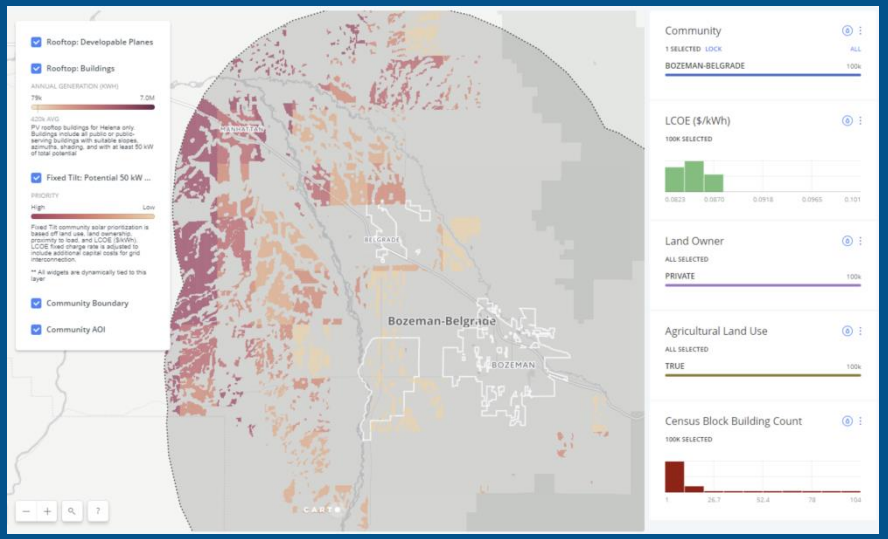
First Year Resources



- National Renewable Energy Laboratory Geospatial Potential Analysis
  - Static Maps for Montana communities and reservations
  - Interactive, online Carto map



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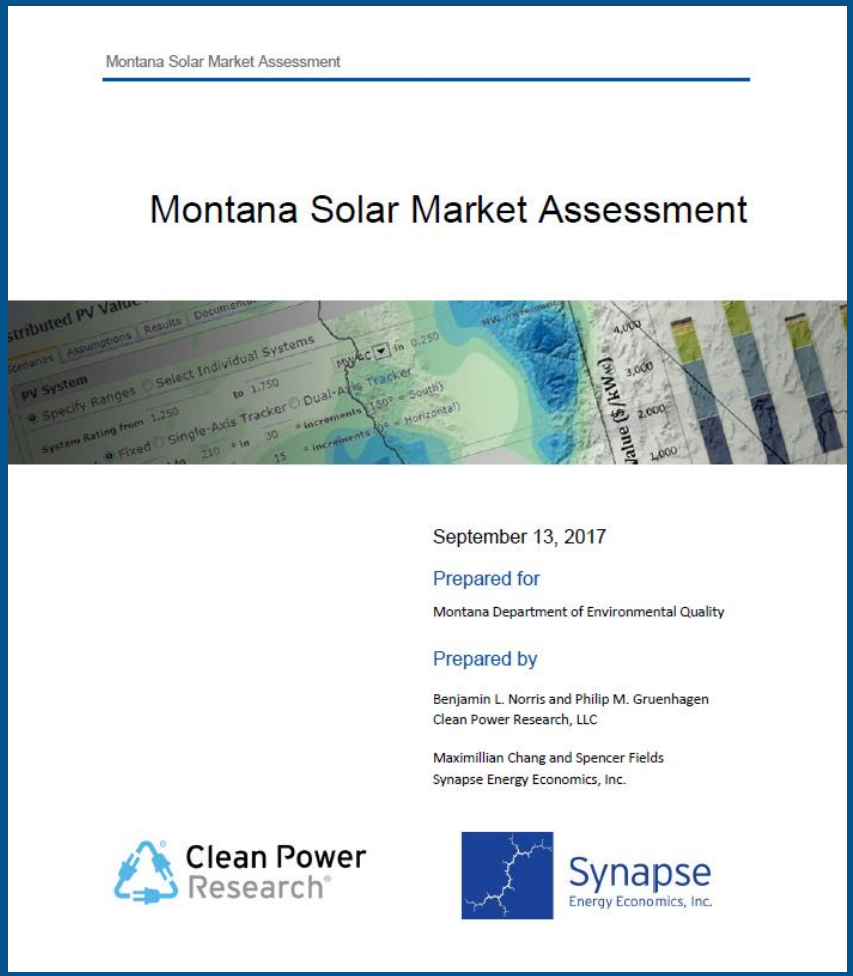
First Year Resources

- Solar Market Assessment
  - Montana and regional solar growth trends
  - Analysis of impact of solar generation variability
  - Alignment of solar and electricity demand in Montana
  - Comparison of Montana, neighbor, and leading state policies on solar
  - Examples of community-scale solar in Montana and the West



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Community Outreach Meetings

- Meetings across the state
- Present different options for how communities can implement solar
- Financial resources for communities
- Hear from community members, local officials, and stakeholders on their visions for solar in their communities

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Menu of Options Report

- Coming in early 2018
- Strengths and weaknesses of different types of solar developments
- Incorporate outreach meeting comments
- Roadmap for communities to develop community-scale solar
- Best practices for developing successful projects

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Phase 2 – 2018/2019

- Direct community outreach, education, and planning
- $80,000 in matching funds for assisting participating communities in planning
- Coordinating Solarize projects
  - Develop a Montana Solarize Handbook

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Montana Renewable Energy Association

Mission:

To expand the use of renewable energy in Montana, affect public policy in favor of renewable energy, and to educate and inform the residents of Montana of the benefits and uses of renewable energy

Focus areas:

- Education and Outreach
- Industry Engagement
- Policy and Advocacy

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www.montanarenewables.org

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What does “Community Scale Solar” look like?

- Shared Solar
- Community Buildings
- Group Assessment and Purchase Programs

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What does “Community Scale Solar” look like?

- **Shared Solar**
- Community Buildings
- Group Assessment and Purchase Programs

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Shared Solar

Also commonly referred to as
"Community Solar"
"Virtual Net Metering"

Flathead Electric Community Solar Array

Located on a single, large site

Size: 10's of 100's of kW

For reference:

Typical rooftop or residential is in the range of 3-9 kW

Utility scale is in the range of 10's or 100's of MW

Goal: act as if the panels were right on your roof

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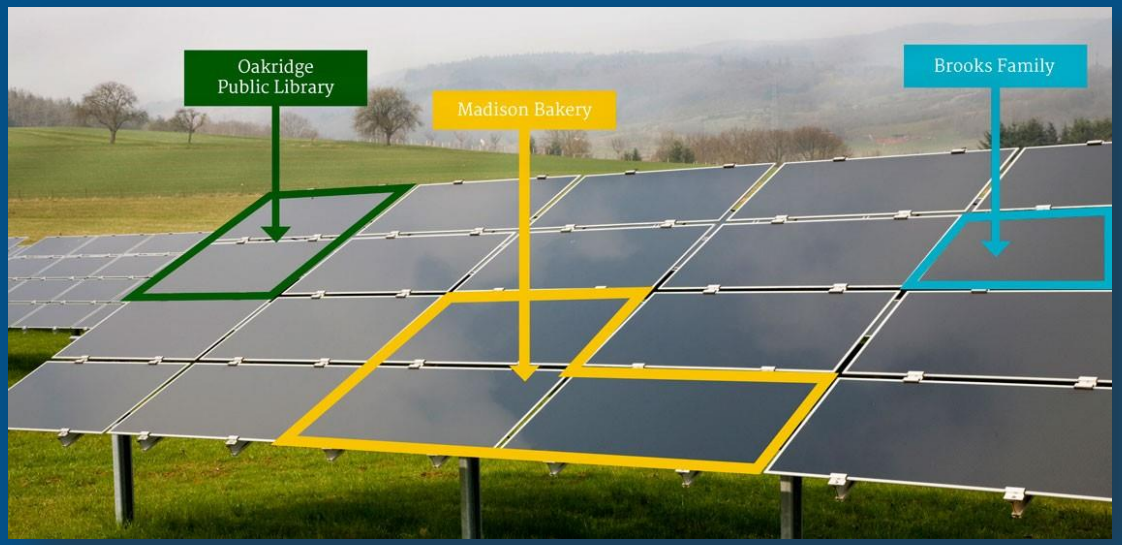
Shared Solar

- Typically financed up-front by the owner (large entities, which can afford it)
- Individuals "subscribe" – purchase or lease a certain # of panels
- Subscribers get credits on their energy bill
- Owner maintains the array



Southern Environmental Law Center

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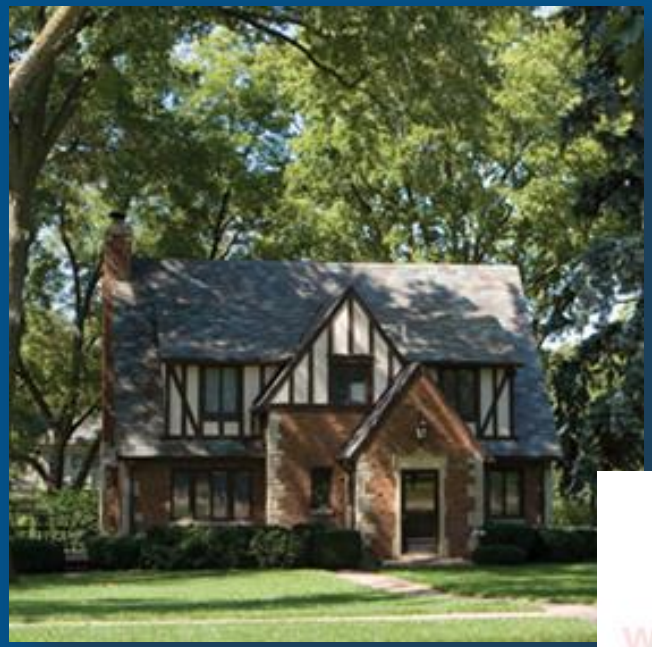
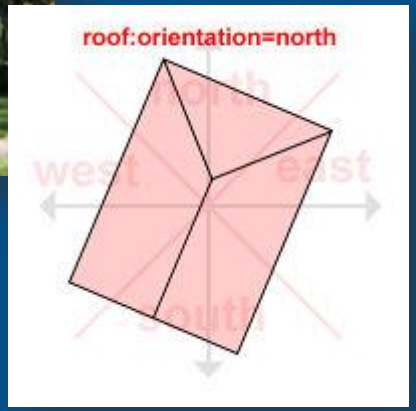
Shared Solar

- Provides access to solar for those who can't install their own systems
  - Renters
  - Roof shading
  - Roof angle
  - Roof support
- Optimal siting means better production





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Shared Solar

Legal considerations

- For Investor Owned Utilities: restricted by MCA and the PSC
- Co-ops are governed differently, and do not share these restrictions

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Shared Solar - Development in Montana

Flathead Electric Co-op – 101 kW (2015)
Missoula Electric Co-op Phase I – 50 kW (2015)
Ravalli Electric Co-op – 50 kW (2016)
Missoula Electric Co-Op Phase II – 50 kW (2016)
NorthWestern Energy Bozeman Pilot Project – 385 kW (2017)
Fergus Electric Co-Op – 100 kW (2017) **considering a Phase 2*
Tongue River Electric Co-Op (planning stages)
Montana-Dakota Utilities
NorthWestern Energy – Missoula Pilot Project (planning stages)

How these projects typically get started:

- Customer/Member demand
- Utility motivation (e.g. Renewable Portfolio Standards)

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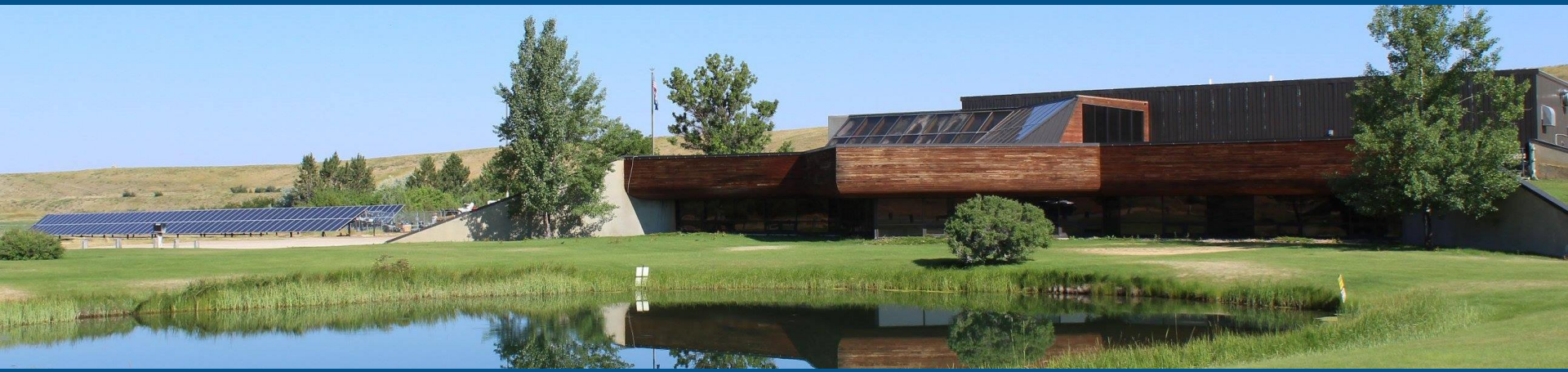
Case Study: Fergus Electric Cooperative

- 100kW, 324 x 330W panels
- Members requested the CoOp look into solar at a Board meeting
- 400 members surveyed; positive response
- Originally considered a 35kW array; enough support to do 100kW
- All but 8 panels sold. (80 subscribers, avg. 3-4 panels/subscriber)
- Are considering a second phase



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What does “Community Scale Solar” look like?

- Shared Solar
- **Community Buildings**
- Group Assessment and Purchase Programs

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Community Buildings

- Libraries
- State offices
- Public schools and universities
- Parking garages and carports

Montana Examples:

- Bozeman City Hall
- Bozeman Public Library
- St. Jude Thaddeus School, Havre
- Park Place, Missoula
- Lewis & Clark Library
- Darby Library

Park Place - Missoula

Lewis & Clark Public Library

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Community Buildings

Benefits

- Reduce long term costs of the building
- Educational opportunity

Financing

- Grants, Loans
- Private donations
- Community fundraising

What's the spark? Local champion!

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Case Study: Lewis & Clark Library, Helena

- 50 kW (153 x 325 W panels), completed March 2017

Community Support

- Library was planning on redoing the roof
- Local advocacy group suggested solar
- Funding support from the Sun Run
- Enough proceeds to install solar at Augusta and Lincoln Branches

Lewis & Clark Library Array – *Big Sky AUV*

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What does “Community Scale Solar” look like?

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- **Group Assessment and Purchase Programs**

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Group Assessment and Purchase Programs

Also called "Solarize"

- Organized programs (by a single entity of group effort)
- Group of individuals participate

Key elements

- Local installer(s) are vetted
- Benefit from economies of scale
- Benefits from sharing of knowledge

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Group Assessment and Purchase Programs

Barriers for going solar	How those are addressed through a Group Assessment/Purchase Program
Complexity – *customers are unclear of the steps on how to "go solar"*	Walk customers through each step of the process at educational meetings
Costs – *customers are concerned they are not getting a good price*	Commonly involve a "program price" or range of prices, benefiting from economies of scale.
Contractor – *customers want a contractor they can trust to do good work*	Participating installer or installers are vetted by program organizers
Motivation	Group efforts can be welcoming and comforting. Participants want to be part of something.

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Case Study: Solarize Missoula (2015-2016)

- DEQ, MREA, City of Missoula, Climate Smart Missoula, Missoula Federal Credit Union
- Local Program Director
- 2 educational workshops
- 4 participating installers
- Key local partners

Results

- 300 attendees at workshops
- 150 site assessments
- 45 new systems

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Montana Solar Community Project Financing Options

Ben Brouwer
Montana Energy Office

Overview

- Participant Financing
- Grants
- Utility Funding
- Tax credits
- Loans

Photo credit: Jordan Solar, Flathead Electric Co-op

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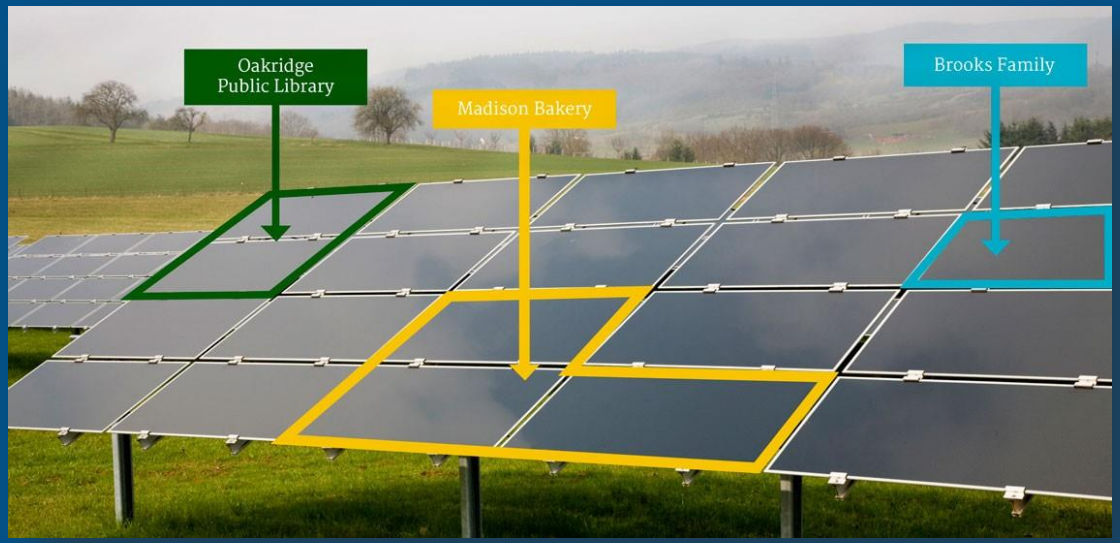
Participant Financing
Shared Solar

- Utility or electric co-op pre-sells shares and builds according to interest in the program
- On-bill financing



Source: Southern Environmental Law Center

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Grants—USDA Rural Energy for America Program
Shared Solar/Business

- USDA Rural Energy for America Program (REAP)
  - Capped at 25% of project costs
  - Agricultural and "rural" small businesses, cooperatives, tribal corporations
  - October 31 application deadline (projects $80,000 or smaller)
  - March 31 application deadline (projects up to $500,000)

- Contact: Bozeman Area Office
  (406) 585-2530
  www.rurdev.usda.gov/mt

Photo credit: Ravalli Electric Co-op

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Grants—Universal System Benefits (USB)
Community Buildings

- NorthWestern Energy
  - Public or non-profit entities only
  - "Projects that maximize the partnering of funding, education, and that increase geographic representation on NorthWestern's electric system are encouraged."
  - Contact:

    Danie Williams, (406) 497-3516

    www.northwesternenergy.com

Photo credits: Kenworthy Electric, Montana Renewable Energy Association

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Utility Funding
Shared Solar/Pilot Projects

- NorthWestern Energy:
  - 385 kW array in partnership with City of Bozeman and MSU
  - Missoula County schools
  - Beck Hill solar + storage micro grid
- Flathead Electric:
  - solar + storage on youth home

Photo credits: OnSite Energy (top), Flathead Electric Co-op (bottom)

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Federal Investment Tax Credit
Residential/Business/Shared Solar

- Up to 30% of total installed cost
- Solar PV or Solar thermal
- Credit set to step down starting in 2020.

Year	2017	2018	2019	2020	2021	2022	Future
Credit	30%	30%	30%	26%	22%	10%	10%

Photo credit: Bozeman Green Build

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Montana Tax Credits
Residential/Solarize

- Alternative Energy Systems (15-32-201, MCA)
  - $500 per taxpayer
  - Solar PV, solar thermal, small wind, biomass, geothermal
  - Community solar share NOT eligible
- Energy Conservation (15-32-109, MCA)
  - $500 per taxpayer
  - Only 25% of total investment is eligible
- Geothermal Systems (15-32-115, MCA)
  - $1,500 per project
  - Ground source heat pump

Photo credit: Montana Renewable Energy Association

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Alternative Energy Revolving Loan Program

Residential/Business/Solarize/Community Buildings

- Fixed 3.25% interest rate for 2017
- $40,000 maximum loan
- 10 year term
- Eligible applicants: individuals, small businesses, local governments, university, non-profit
- Not yet available for virtual net metering

- Contact:

  Ben Brouwer, 406-444-6586

  www.deq.mt.gov/energy

Photo credit: Solar Montana, Montana Renewable Energy Association

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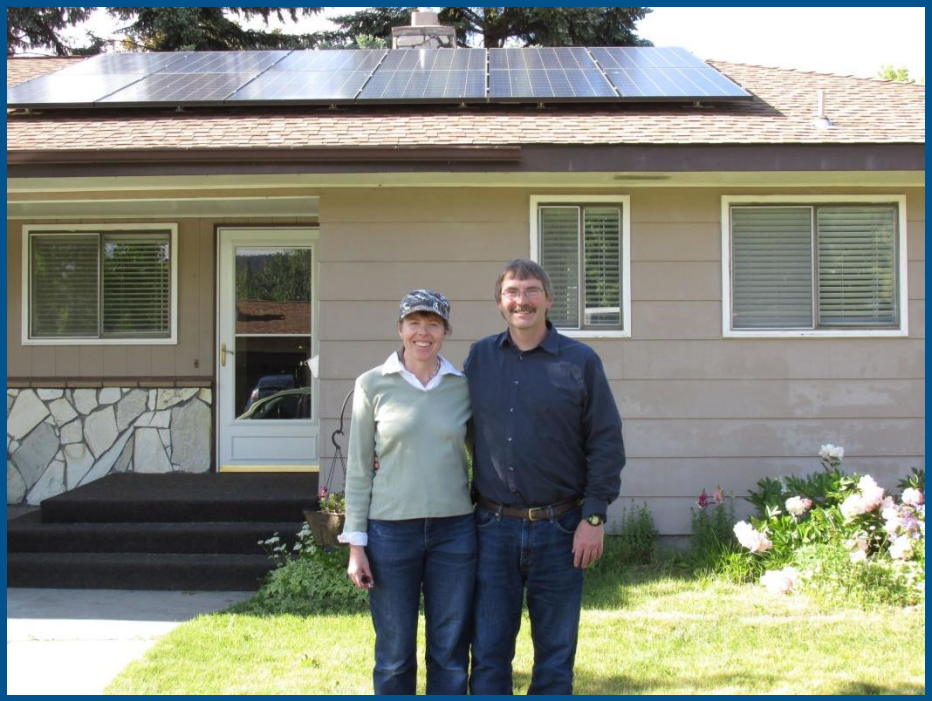
Solarize Case Study



Project Details

- Solarize Missoula, Schmidt Home
- Year installed: 2016
- 3.12 kilowatt rooftop PV array w/micro inverters
- $10,296 total pre-incentive installed cost
- $3.30/watt
- Federal tax credit: $3,088
- State tax credit: $1,000
- Missoula Federal Credit Union Loan

Source: Montana Renewable Energy Association

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Shared Solar Case Study

Project Details

- Fergus Electric Co-op
- Year installed: 2017
- 100 kilowatt ground-mounted PV array
- Total pre-incentive installed cost: $193,780
- $1.93/watt
- Cost per panel: $595
- Federal tax credit per panel: $178
- Estimated payback period: 9.4 years

Source: Clean Power Research & Synapse Energy Economics, 2017, "Montana Solar Market Assessment."

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Community Building Case Study

Project Details

- Lewis and Clark Public Library
- 50 kilowatt rooftop PV array
- Total pre-incentive installed cost: $105,260
- $2.11/watt
- NorthWestern Energy USB grant: $90,000
- Sun Run grant: $11,500
- Private foundation: $30,000

Photo credit: Big Sky UAV

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Questions?

For more information, go to MTSolarCommunity.com

(… in a couple of weeks, it's not ready yet)

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Montana's Solar Future

- What is your vision for solar in your community?
- What types of projects are most attractive to you? Why?
- What are the biggest opportunities for developing solar in your community?
- How should the Montana Solar Community Project work with your community?

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Montana's Solar Future

- What does the energy landscape of your community look like in 5 years? 10 years? 20 years?
- What types of projects do you think will be the most successful in your community? Why?
- What do you think are the biggest barriers to increased solar usage in your community?
- How does your energy provider fit into your solar vision?
- What role is there for your local and state elected officials to play in the energy future of your community?

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